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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 April 2001 (12.04.2001)

PCT

(10) International Publication Number
WO 01/25480 A2

(51) International Patent Classification⁷: C12Q 1/68

(21) International Application Number: PCT/GB00/03860

(22) International Filing Date: 6 October 2000 (06.10.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9923644.0 6 October 1999 (06.10.1999) GB

(71) Applicant (for all designated States except US): MEDICAL BIOSYSTEMS LTD. [GB/GB]; The Old Mill, Beaston Cross, Broadhempston, Totnes, Devon TQ9 6BX (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): DENSHAM, Daniel, Henry [GB/GB]; Medical Biosystems Ltd., The Old Mill, Beaston Cross, Broadhempston, Totnes, Devon TQ9 6BX (GB).

(74) Agent: GILL JENNINGS & EVERY; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— Without international search report and to be republished upon receipt of that report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 01/25480 A2

(54) Title: DNA SEQUENCING METHOD

(57) Abstract: A method for determining the sequence of a polynucleotide, the method relying on the detection of a conformational change in an enzyme that interacts with and processes along the polynucleotide. The detection of a conformational change may be carried out by measuring changes in a fluorophore bound to the enzyme.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year)
 21 June 2001 (21.06.01)

International application No.
 PCT/GB00/03860

Applicant's or agent's file reference
 REP06193WO

International filing date (day/month/year)
 06 October 2000 (06.10.00)

Priority date (day/month/year)
 06 October 1999 (06.10.99)

Applicant

DENSHAM, Daniel, Henry

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

26 April 2001 (26.04.01)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Olivia TEFY

Telephone No.: (41-22) 338.83.38

101089877

10089877.080802

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
12 April 2001 (12.04.2001)

PCT

(10) International Publication Number
WO 01/25480 A3(51) International Patent Classification⁷: C12Q 1/68

(21) International Application Number: PCT/GB00/03860

(22) International Filing Date: 6 October 2000 (06.10.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9923644.0 6 October 1999 (06.10.1999) GB(71) Applicant (for all designated States except US): **MEDICAL BIOSYSTEMS LTD.** [GB/GB]: The Old Mill, Beaston Cross, Broadhempston, Totnes, Devon TQ9 6BX (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **DENSHAM, Daniel, Henry** [GB/GB]: Medical Biosystems Ltd., The Old Mill, Beaston Cross, Broadhempston, Totnes, Devon TQ9 6BX (GB).(74) Agent: **GILL JENNINGS & EVERY**; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB).(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).**Published:**

— with international search report

(88) Date of publication of the international search report:
16 May 2002*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: DNA SEQUENCING METHOD

(57) Abstract: A method for determining the sequence of a polynucleotide, the method relying on the detection of a conformational change in an enzyme that interacts with and processes along the polynucleotide. The detection of a conformational change may be carried out by measuring changes in a fluorophore bound to the enzyme.

WO 01/25480 A3

PCT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference REP06193W0	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/GB 00/ 03860	International filing date (day/month/year) 06/10/2000	(Earliest) Priority Date (day/month/year) 06/10/1999
Applicant MEDICAL BIOSYSTEMS LT		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 00/03860

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, EPO-Internal, WPI Data, PAJ, CHEM ABS Data, EMBASE, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 06138 A (UNIV CALIFORNIA) 2 March 1995 (1995-03-02) page 10, last paragraph -page 14; figures ---	1,2,4,5
X	HA TAEKJIP ET AL: "Single-molecule fluorescence spectroscopy of enzyme conformational dynamics and cleavage mechanism." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 96, no. 3, 2 February 1999 (1999-02-02), pages 893-898, XP002171247 Feb. 2, 1999 ISSN: 0027-8424 the whole document --- -/--	18,20,21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

5 July 2001

Date of mailing of the international search report

17/07/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
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Authorized officer

Reuter, U

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 00/03860

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 05315 A (DENSHAM DANIEL HENRY ;MEDICAL BIOSYSTEMS LTD (GB)) 4 February 1999 (1999-02-04) the whole document ---	1,2,4,5
A	FUREY W SCOTT ET AL: "Use of fluorescence resonance energy transfer to investigate the conformation of DNA substrates bound to the Klenow fragment." BIOCHEMISTRY, vol. 37, no. 9, 3 March 1998 (1998-03-03), pages 2979-2990, XP002171248 ISSN: 0006-2960 the whole document ---	1-21
A	HA T ET AL: "Probing the interaction between two single molecules: Fluorescence resonance energy transfer between a single donor and a single acceptor." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 93, no. 13, 1996, pages 6264-6268, XP002171249 1996 ISSN: 0027-8424 cited in the application the whole document ---	1-21
A	WO 90 13666 A (AMERSHAM INT PLC) 15 November 1990 (1990-11-15) the whole document ---	1-21
A	WEISS SHIMON: "Fluorescence spectroscopy of single biomolecules." SCIENCE (WASHINGTON D C), vol. 283, no. 5408, 12 March 1999 (1999-03-12), pages 1676-1683, XP002171250 ISSN: 0036-8075 the whole document ---	1-21
P,X	WO 00 53805 A (ARMES NIAL ANTONY ;STEMPLE DEREK LYLE (GB); ASM SCIENT INC (US)) 14 September 2000 (2000-09-14) page 3-4 page 18-19; claims; example 4 ---	1,2,4,5, 10,14-21
E	WO 00 60114 A (DENSHAM DANIEL HENRY ;MEDICAL BIOSYSTEMS LTD (GB)) 12 October 2000 (2000-10-12) the whole document -----	1,3-5

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/03860

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9506138	A	02-03-1995	US	5620854 A		15-04-1997
WO 9905315	A	04-02-1999	AU	8455998 A		16-02-1999
			BR	9812270 A		18-07-2000
			CN	1265158 T		30-08-2000
			EP	1017848 A		12-07-2000
WO 9013666	A	15-11-1990	CA	2045505 A		12-11-1990
			EP	0471732 A		26-02-1992
			JP	4505251 T		17-09-1992
WO 0053805	A	14-09-2000	AU	3174600 A		28-09-2000
WO 0060114	A	12-10-2000	AU	3978100 A		23-10-2000

REC'D 08 JAN 2002

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference REP06193WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/03860	International filing date (day/month/year) 06/10/2000	Priority date (day/month/year) 06/10/1999
International Patent Classification (IPC) or national classification and IPC C12Q1/68		
Applicant MEDICAL BIOSYSTEMS LTD. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☒ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26/04/2001	Date of completion of this report 04.01.2002
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Wieser, M Telephone No. +49 89 2399 8434 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/03860

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-13 as originally filed

Claims, No.:

1-21 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

Sequence listing part of the description, pages:

12, as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/03860

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3,6-17,19
	No:	Claims	1,2,4,5,18,20,21
Inventive step (IS)	Yes:	Claims	6-9,17
	No:	Claims	3,10-16,19
Industrial applicability (IA)	Yes:	Claims	1-21
	No:	Claims	

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

Section V

The following documents mentioned in the International Search Report are considered as being the most relevant prior art:

D1: WO 95 06138 A (UNIV CALIFORNIA) 2 March 1995 (1995-03-02)

D2: WO 99 05315 A (DENSAM DANIEL HENRY ;MEDICAL BIOSYSTEMS LTD (GB)) 4 February 1999 (1999-02-04)

D3: HA TAEKJIP ET AL: 'Single-molecule fluorescence spectroscopy of enzyme conformational dynamics and cleavage mechanism.' PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 96, no. 3, 2 February 1999 (1999-02-02), pages 893-898, XP002171247 Feb. 2, 1999 ISSN: 0027-8424

1. The measurement of polymerase confirmation to determine a polynucleotide sequence is known in the art. D1 discloses a micromechanical detector for use in DNA sequence determination, by measuring the movement of the polymerase during polymerisation (see pages 10-14 and figures). D2 refers to a sequencing method with an immobilised polymerase, wherein the incorporation of nucleotides is detected by surface plasmon resonance (see claims, pages 14-15 and figures).

The disclosure in D1 and D2 anticipates the subject-matter of claims 1,2,4 and 5. These claims are not novel and do not meet the requirements of Article 33(2) PCT.

2. The detection of conformational changes of enzymes, by using intramolecular FRET, is known. D3 describes the detection of nuclease activity with single-molecule fluorescence spectroscopy. The enzyme is immobilised and labelled with fluorescence donor and acceptor. A second molecule may also be attached to the DNA-substrate. Enzyme activity is monitored by FRET (see abstract, materials and methods).

The teaching in D3 is considered to anticipate the subject-matter of claims 18,20 and 21, which accordingly are not considered to be novel (Article 33(2) PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/03860

3. The subject-matter of claims 3,10-16 and 19 is not considered to be based on an inventive concept per se and does not meet the requirements of Article 33(3) PCT.
4. D1 or D2 are considered as being the closest state of the art for the method of claim 6, which is distinguished therefrom by a different detection method. The problem to be solved may therefore be considered the provision of an alternative method for measuring the incorporation of nucleotides onto a template, thereby determining the sequence of the template.

When turning to D3, relating to FRET measurements taken from complementary DNA strands, wherein each strand is labelled with either a donor or acceptor fluorophore, the skilled person would not arrive in an obvious way at the solution as disclosed in claim 6, i.e. using an enzyme comprising a label which alters its characteristics as the enzyme undergoes a conformational change. Moreover, this solution, in contrast to the methods of D1 and D2, allows to determine the sequence of a polynucleotide without the need to incorporate complementary nucleotides.

Accordingly, the method of claim 6 is based on an inventive concept and meets the requirements of Article 33(3) PCT. The same applies to the subject-matter of claims 7-9 and 17.

Section VI

Certain published documents (Rule 70.10)

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO-A-00/53805	14.09.2000	10.03.2000	10.03.1999
WO-A-00/60114	12.10.2000	06.04.2000	06.04.1999

Should the priority of the present application not be valid, the first document would be relevant with respect to novelty and inventive step (Articles 33(2) and (3) PCT). Furthermore, should the present application be entered into the regional phase, both documents could be relevant to the question of novelty.

INTERNATIONAL COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P50-0036 PCT	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/US 00/ 29945	International filing date (<i>day/month/year</i>) 30/10/2000	(Earliest) Priority Date (<i>day/month/year</i>)
Applicant MICHELIN RECHERCHE ET TECHNIQUE S.A.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

national application No.

PCT/US 00/ 29945

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A system for monitoring earthmover vehicle tires, (12) comprising at least one sensor unit (20) mountable within the pressurizable interior of a tire, the sensor unit including a pressure sensor and a temperature sensor, an integrated circuit including memory to collect and store data and to store at least pressure and temperature reference data, a radio frequency interface to transmit received data externally, a magnetic interface for receiving activation, input and deactivation signals, a power circuit, and a microprocessor circuit having a timer for activating pressure and temperature data collection at fixed intervals; a reader (30) mountable on the vehicle remote from the tire, the reader having a receiver for receiving data transmitted from the at least one sensor unit, a memory for storing data received from the at least one sensor unit, and a radio frequency transmitter for transmitting data remote to the vehicle responsive to an external signal; and a portable communication unit (50) comprising a means for communicating with the sensor unit and the reader, a memory for storing data received from the sensor unit and the reader, and a display for displaying received data in visual format.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/29945

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B60C23/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 026 015 A (SCHRADER BRIDGEPORT INTERNATIO) 9 August 2000 (2000-08-09) column 2, line 25 -column 4, line 8; figure 1 -----	1

☐

Further documents are listed in the continuation of box C.

☒

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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Information on patent family members

International Application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1026015 A	09-08-2000	NONE	